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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,088	12/18/2001	Lawrence J. DaQuino	10010820-1	2911
7590		07/13/2004	EXAMINER	
Gordon Stewart		DO, AN H		
Agilent Technologies		ART UNIT		
Legal Department, DL429		PAPER NUMBER		
P.O. Box 7599		2853		
Loveland, CO 80537-0599		DATE MAILED: 07/13/2004		

Please find below and/or attached an Office communication concerning this application or proceeding.

SA

Office Action Summary	Application No.	Applicant(s)	
	10/022,088	DAQUINO ET AL.	
	Examiner	Art Unit	
	An H. Do	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 20-30 and 37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-6, 8, 10 and 31 is/are rejected.
- 7) ☒ Claim(s) 3, 7, 9, 11-19 and 32-36 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/18/01</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Response to Restriction/Election Requirement filed on 19 April 2004 has been acknowledged.

Election/Restrictions

1. Applicant's election with traverse of Group Ia, claims 1-19 and 31-36 in Paper filed on 19 April 2004 is acknowledged. The traversal is on the ground(s) that the it would not be a serious burden on the Examiner to search claims 20-30 and 37 related to other inventions Ib through IV. This argument is not found persuasive because of the following reasons:

-Group Ib (claims 20, 21, 23 and 24) relating to the method of depositing a volume of a fluid containing a biopolymer or precursor belongs to class 435, subclass 6.

-Group Ic (claim 37) relating to the method of fabricating a pulse jet printhead belongs to class 435, subclass 6.

-Group IIa (claim 22) relating to the method of making a biopolymer array belongs to class 436, subclass 177.

-Group IIb (claim 25) relating to the method of depositing a volume of a fluid containing a biopolymer or precursor belongs to class 435, subclass 6.

-Group III (claims 26-29) relating to the method of detecting a presence of an analyte in a sample belongs to class 436, subclass 86.

-Group IV (claim 30) relating to a kit for use an assay the employs an array belongs to class 435, subclass 7.1.

The requirement is still deemed proper and is therefore made FINAL.

Drawings

2. New corrected drawings are required in this application because the submitted drawings contain too dark and unrecognizable shaded detailed portions. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4-6 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Anderson et al (US 5,719,605).

Anderson et al disclose the following claimed features:

Regarding claim 1, a pulse jet printhead assembly (Figures 1A-1C) comprising:
(a) a multiple die printhead (29) comprising: (i) an orifice plate (30) comprising a plurality of orifices (30a); and (ii) a plurality of printhead dies (20) present on a surface of said orifice plate (column 3, lines 57-58) in operational alignment with said orifices (30a) to produce a least one firing chamber (the chamber for use in ejecting fluid or ink); and (b) a multiple reservoir housing (32, tank or bottle) affixed to said multiple die printhead (29).

Regarding claim 4, wherein said printhead (Figures 4 and 5, element 50) comprises from 2 to about 10 printhead dies/banks/cells (both Figures 4 and 5 show three dies/banks/cells 21).

Regarding claim 5, wherein said printhead (Figures 4 and 5, element 50) comprises from 2 to 5 printhead dies/banks/cells (both Figures 4 and 5 show three dies/banks/cells 21).

Regarding claim 6, wherein said printhead assembly is a thermal pulse jet printhead assembly (column 4, lines 44-52).

Regarding claim 31, an automated pulse jet printing system (column 4, lines 8-15), said system comprising a pulse jet printhead assembly (Figures 1A-1C) comprising: (a) a multiple die printhead (29) comprising: (i) an orifice plate (30) comprising a plurality of orifices (30a); and (ii) a plurality of printhead dies (20) present on a surface of said orifice plate (column 3, lines 57-58) in operational alignment with said orifices (30a) to produce a least one firing chamber (the chamber for use in ejecting fluid or ink); and (b) a multiple reservoir housing (32, tank or bottle) affixed to said multiple die printhead (29).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (US 5,719,605) in view of Manini (US 6,412,921).

Anderson et al do not clearly disclose the following claimed feature:

-wherein said assembly comprises from about 2 to about 100 distinct reservoirs.

Manini teaches in Figures 1 and 2 the following:

-wherein said assembly comprises from about 2 to about 100 distinct reservoirs/ink tanks (herein shown three ink tanks 34a-34c) for the purpose of providing numerous different types of inks to the ink jet printhead.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have said assembly comprises from about 2 to about 100 distinct reservoirs, as taught by Manini into Anderson et al, for the purpose of providing numerous different types of inks to the ink jet printhead.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (US 5,719,605) in view of Hayes (US 5,681,757).

Anderson et al do not disclose the following claimed feature:

-wherein said housing comprises at least one excess adhesive flow path.

Hayes teaches the following:

-wherein said housing comprises at least one excess adhesive flow path (column 2, lines 53-57) for the purpose of producing any variety of pattern shape and size without the need to change heads (column 3, lines 38-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least one of said reservoirs comprises a fluid that

Art Unit: 2853

includes a biopolymer or precursor thereof, as taught by Hayes into Anderson et al, for the purposes of producing any variety of pattern shape and size without the need to change heads (column 3, lines 38-40).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (US 5,719,605) in view of Gamble et al (US 5,874,554).

Anderson et al do not disclose the following claimed feature:

-wherein at least one of said reservoirs comprises a fluid that includes a biopolymer or precursor thereof.

Gamble et al teach the following:

-wherein at least one of said reservoirs (solvent vehicles) comprises a fluid that includes a biopolymer or precursor thereof (column 2, lines 47-57) for the purposes of reducing reagent precipitation in the jetting tubes and improving the efficiency of the particular reactions occurring during the synthesis (column 5, lines 13-22).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have at least one of said reservoirs comprises a fluid that includes a biopolymer or precursor thereof, as taught by Gamble et al into Anderson et al, for the purposes of reducing reagent precipitation in the jetting tubes and improving the efficiency of the particular reactions occurring during the synthesis (column 5, lines 13-22).

Allowable Subject Matter

9. Claims 3, 7, 9, 11-19 and 32-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 3 is the inclusion of the limitation of a pulse jet printhead assembly that includes the ratio of reservoirs to dies in said assembly ranges from about 2 to about 20. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 7 is the inclusion of the limitation of a pulse jet printhead assembly that includes each reservoir has walls that are sufficiently high to prevent cross-contamination of samples among reservoirs of said housing. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claim 9 is the inclusion of the limitation of a pulse jet printhead assembly that includes a housing having at least one discontinuity at a reservoir housing printhead mating surface that prevents gap formation at the housing printhead interface following adhesive curing. It is this limitation found in the claims, as it is claimed in the combination of, that has not been

found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 11-19 is the inclusion of the limitations of a pulse jet printhead assembly that includes each reservoir of said multiple reservoir housing has walls that are sufficiently high to prevent cross-contamination of samples among reservoirs; said housing comprises at least one excess adhesive flow path; and said housing comprises at least one discontinuity at a reservoir housing printhead mating surface that prevents gap formation at the housing printhead interface following adhesive curing. It is these limitations found in the claims, as they are claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 32-36 is the inclusion of the limitation of an automated pulse jet printing system that includes a multiple reservoir housing is configured to be mounted on a multiple printhead die printhead in a manner that maintains orifice to orifice spacing of an orifice plate component of said printhead. It is this limitation found in the claims, as it is claimed in the combination of, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kowallis et al (US 6,228,659) disclose an apparatus for producing a plurality of arrays of reagent regions. Waller et al (US 6,250,738) disclose an inkjet printing system having a plurality of thermal printhead dies formed on the

Art Unit: 2853

carrier substrate. Mantell et al (US 5,900,892) disclose a nozzle plate having a plurality of orifices bonded to the head silicon substrate.

Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to An H. Do whose telephone number is 571-272-2143.

The examiner can normally be reached on Monday-Friday (Flexible).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on 571-272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



AD
July 9, 2004

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